KR

May 18, 1979

Dr. Haughie

Dr. Matuszek

Pine Bowl Alley/Baia Pontiac

Enclosed is a set of calculations prepared by the Bureau of Radiological Health concerning the Pine Bowl Alley. While the calculations are nice, and the analyses suitable, the document begs the issue.

There is little question that the contaminating material should be removed, on the basis of two primary criteria:

1. That the material produced by Union Carbide was licensable source material and that all such wastes were required to have been buried in a controlled, secured landfill under State exemption, and

2. That under reasonable circumstances, a worker at Baia Pontiac could be exposed to 1 rem/year, twice the level permitted under Part 16.

My views have been stated earlier at two meetings held with Drs. Hetling and Stasiuk and then with Dr. Stasiuk and Mr. Davies. Why it has taken so long for these meetings to be translated into a plan of action is beyond me.

JMM/rz
cc: Dr. Axelrod
Dr. Huffaker
Dr. Hetling
Dr. Stasiuk
Mr. Davies ✓

Supplement to May 15, 1979 Report on Pine Bowl Alley

The exposure levels inside Pine Bowl and Baia Pontiac buildings were surveyed by W. O'Brien, Buffalo Regional Office, and B. Heald, Bureau of Radiological Health, on May 23, 1979. Occupancy estimates for the two facilities were obtained from the operators of the facilities in a meeting on May 24, 1979.

Based on the data obtained during the survey the integrated annual dose was estimated as follows:

Estimated dose inside buildings due to external exposure

	Pine Bowl	Baia Pontiac	Total
Average	4.7	0.5	5.2 person-rem/year
Maximum	5.8	1.5	7.3 person-rem/year

Maximum estimated dose due to exposure to external radiation inside buildings and in parking lot is:

$$7.3 + 10.5 = 17.8 \text{ person - rem/year}$$

Absolute risk estimate (based on maximum estimated dose):

$$.001 < \text{excess fatal cancers} < .005$$

Relative risk: excess cancer < .001 of that occurring due to all causes.

Maximum annual dose to one individual spending 40 hours/week indoors $\sim$ 200 mrem

Maximum dose to a child spending 3 hours/week, 40 weeks/year in the nursery $\sim$ 7.2 mrem

The above estimates do not include dose due to radon emanation inside the buildings. In view of the fact that parts of the Baia Pontiac building are built on top of the slag, measurements of radon levels need to be taken in order to assess the risk due to it.

Additional Alternatives to be Considered:

5. Commissioner's order restricting use of parking lot and order or recommendation requiring actions to reduce exposure inside the buildings, such as:

    a) remove slag adjacent to buildings
    b) cover the floor of the collision shop and car wash area in Baia Pontiac with a concrete layer
    c) apply sealing material to the floor of the collision shop and wash area in Baia Pontiac in order to reduce radon leakage into these areas (if this is found to be a problem).

-Continued-

Health Risk Assessment:

Such actions will reduce exposure due to time spent inside the buildings which is about 41% of the total estimated exposure. Will not affect risks due to exposure in the parking lot.

Engineering and Cost:

a) cost of action taken
b) Regulatory agency needs to enforce commissioner's order.

Comments:

Brings situation to alternative 2 above.

In addition, such an alternative will be difficult to justify from a risk point of view, while accepting the risk due to exposure in the parking lot.

ds
5/29/79

Supplement to May 15, 1979 Report on Pine Bowl Alley

The exposure levels inside Pine Bowl and Baia Pontiac buildings were surveyed by W. O'Brien, Buffalo Regional Office, and B. Heald, Bureau of Radiological Health, on May 23, 1979. Occupancy estimates for the two facilities were obtained from the operators of the facilities in a meeting on May 24, 1979.

Based on the data obtained during the survey the integrated annual dose was estimated as follows:

Estimated dose inside buildings due to external exposure

	Pine Bowl	Baia Pontiac	Total
Average	4.7	0.5	5.2 person-rem/year
Maximum	5.8	1.5	7.3 person-rem/year

Maximum estimated dose due to exposure to external radiation inside buildings and in parking lot is:

$$7.3 + 10.5 = 17.8 \text{ person - rem/year}$$

Absolute risk estimate (based on maximum estimated dose):

$$.001 < \text{excess fatal cancers} < .005$$

Relative risk: excess cancer < .001 of that occurring due to all causes.

Maximum annual dose to one individual spending 40 hours/week indoors $\sim$ 200 mrem

Maximum dose to a child spending 3 hours/week, 40 weeks/year in the nursery $\sim$ 7.2 mrem

The above estimates do not include dose due to radon emanation inside the buildings. In view of the fact that parts of the Baia Pontiac building are built on top of the slag, measurements of radon levels need to be taken in order to assess the risk due to it.

Additional Alternatives to be Considered:

5. Commissioner's order restricting use of parking lot and order or recommendation requiring actions to reduce exposure inside the buildings, such as:

    a) remove slag adjacent to buildings
    b) cover the floor of the collision shop and car wash area in Baia Pontiac with a concrete layer
    c) apply sealing material to the floor of the collision shop and wash area in Baia Pontiac in order to reduce radon leakage into these areas (if this is found to be a problem).

-Continued-

Health Risk Assessment:

Such actions will reduce exposure due to time spent inside the buildings which is about 41% of the total estimated exposure. Will not affect risks due to exposure in the parking lot.

Engineering and Cost:

a) cost of action taken
b) Regulatory agency needs to enforce commissioner's order.

Comments:

Brings situation to alternative 2 above.

In addition, such an alternative will be difficult to justify from a risk point of view, while accepting the risk due to exposure in the parking lot.

ds
5/29/79

PINE ? OWL PARKING LOT ROCK 400 MIN.

SAMPLE #	590019	COLLECTION DATE	3-27-77
TYPE	ROCK	COUNTING DATE	[illegible]
VOLUME	56.381g	LENGTH OF COUNT	[illegible]
GEOMETRY	25 ml	ANALYST	MV

Peak Channel	Energy Kev	Nuclide	Gross cpm	Bkg. cpm	Net cpm	Results pCi/g
^{238}U		[illegible]				1.01 E+02 ± 9%
^{232}Th		[illegible]				8.4 E+02 ± 4%
^{226}Ra		[illegible]				2.05 E+02 ± 4%
		~~[illegible]~~ ^{232}Th (^{228}Ac)				~~[illegible]~~
		40 K				9 E+01 ± 22%

— 835 KeV LINE USED FOR THIS DETERMINATION IS ALSO PRESENT IN THE SPECTRUMS OF THE TWO SMALL SLICE SAMPLES OF 5/7/17. I HAVE ALL OF THE SPECTRUMS. MV

$840 \times 10^{-12} \times 10^{7} = 10^{-2}$

RECEIVED
MAY 7 1979
N. Y. STATE DEPT. OF HEALTH
BUFFALO REGIONAL OFFICE